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Claims

Sub B4 5
1. An offshore structure comprising a base, a deck, and a plurality of lattice legs extending between the base and the deck, wherein the legs are arranged outboard of the deck and a connection is provided between an inwardly facing face of each said leg and the deck.

10 2. An offshore structure as claimed in claim 1, wherein each said lattice leg comprises a vertically extending chord at each corner thereof.

15 3. An offshore structure as claimed in claim 2, wherein each said leg chord is circular in cross section.

Sub B4 26
4. ~~An offshore structure as claimed in any preceding claim, wherein each said lattice leg is triangular.~~

5. ~~An offshore structure as claimed in any of claims 2 to 4, wherein the connection between each said leg and the deck comprises a shear plate attached substantially vertically between the deck and a said leg chord.~~

25 Sub B4
30 6. An offshore structure as claimed in claim 5, wherein the connection further comprises a stiffening plate extending through a diameter of the leg chord, wherein a first side edge of said shear plate is welded to said stiffening plate and said shear plate and said stiffening plate are substantially aligned.

35 7. An offshore structure as claimed in claim 6, wherein the stiffening plate extends over a greater length of the leg chord than the shear plate.

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8. ~~An offshore structure as claimed in claim 6 or 7, wherein the inboard end of said shear plate is welded between two plates extending outwardly from the deck edge.~~

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9. ~~An offshore structure as claimed in any of claims 5 to 8, wherein the connection further comprises a further metal coupling plate attached horizontally between the deck and the leg chord.~~

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10. An offshore structure as claimed in claim 9, wherein the coupling plate has a cut-out in an edge facing the leg chord, such that a part of the periphery of the leg chord is held within the cut-out.

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11. An offshore structure as claimed in claim 10, wherein the cut-out is elliptical in shape.

Sub A3
12. ~~An offshore structure as claimed in any of claims 9 to 11, wherein a horizontal web is attached to the deck and the coupling plate is butt welded thereto.~~

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13. An offshore structure as claimed in any of claims 9 to 12, wherein plate stiffeners extending from the inboard end to the outboard end are provided in the coupling plate.

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14. ~~An offshore structure as claimed in any of claims 9 to 13, wherein a coupling plate is provided at the top and the bottom of the shear plate.~~

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15. An offshore structure as claimed in claim 14, wherein each coupling plate is welded to the shear plate at the join between the plates.

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16. ~~An offshore structure as claimed in any of claims 2 to 15, wherein the connection is formed between the deck~~

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~~and two said leg chords located at either end of the
inwardly facing face of the lattice leg.~~

5 17. A method of installing an offshore structure
comprising a base, a deck and a plurality of lattice
legs located outboard of the deck, the method
comprising the steps of: jacking the deck to the
required height; forming a permanent connection between
the deck and the legs; and removing the jacking system
10 from the structure.

15 18. A method of installing an offshore structure as
claimed in claim 17, wherein guides are provided on the
deck so as to guide the deck as it is jacked up the
legs.

20 19. A method of installing an offshore structure as
claimed in claim 18, further comprising the steps of:
attaching four legs to the base; attaching two guides to
the deck; floating the deck over the base so that it
passes between the legs until the guides abut against
two said legs; and attaching another two guides to the
deck.

25 ~~20. A method of installing an offshore structure as
claimed in claim 18 or 19, wherein the guides comprise
beams attached to and projecting from the upper surface
of the deck and being shaped for engaging a chord of a
said leg.~~

30 21. A method of installing an offshore structure as
claimed in any of claims 17 to 20, wherein the deck is
located relative to the legs prior to formation of the
permanent connection.

35 22. A method of installing an offshore structure as
claimed in claim 21, wherein the deck is located by

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pulling the leg towards the deck so as to hold the leg chord against the guide.

Sub A6 5 ~~23. A method of installing an offshore structure as claimed in claim 22, wherein a hydraulic tugger is provided between an outer edge of the leg and the deck so as to pull the leg towards the deck.~~

10 24. A method of installing an offshore structure as claimed in any of claims 21 to 23, wherein hydraulic screw jacks are provided at the base of the deck so as to push the inboard leg chords away from the lower deck edge.

15 25. A method of installing an offshore structure as claimed in any of claims 22 to 24, wherein the deck is pulled towards each of the legs.

20 26. A method of locating a deck of an offshore structure relative to a plurality of outboard lattice legs, said legs comprising a plurality of chords arranged at respective corners thereof, said method comprising the steps of pulling an outer leg chord towards said deck and pushing the leg chords located adjacent the deck away therefrom.

25 27. A method of locating a deck of an offshore structure relative to a plurality of outboard lattice legs as claimed in claim 26, wherein the outer leg chord is pulled towards the deck by means of a hydraulic tugger.

Sub A7 35 ~~28. A method of locating a deck of an offshore structure relative to a plurality of outboard lattice legs as claimed in claim 26 or 27, wherein the leg chords located adjacent the deck are pushed away therefrom by means of hydraulic screw jacks extending~~

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from the deck edge.

29. A method of installing an offshore structure as claimed in any of claims 17 to 25, wherein the permanent connection is formed by welding a substantially vertically extending shear plate between a chord of the lattice leg and the deck edge.

30. A method of installing an offshore structure as claimed in claim 29, wherein a stiffening plate is provided through a diameter of the leg, and a first side edge of said shear plate is welded to said stiffening plate, and said shear plate and said stiffening plate are substantially aligned.

31. A method of installing an offshore structure as claimed in claim 30, wherein the stiffening plate extends over a greater length of the leg chord than the shear plate.

32. A method of installing an offshore structure as claimed in claim 30 or 31, wherein two plates are welded to the deck edge on respective sides of the shear plate and extending outwardly from the deck edge, and the inboard end of said shear plate is welded between the two plates.

33. A method of installing an offshore structure as claimed in any of claims 29 to 32, wherein the connection further comprises a further metal coupling plate attached horizontally between the deck and the leg chord, the second metal plate having a cut-out in an edge facing the leg chord, such that a part of the periphery of the leg chord is held within the cut-out.

34. A method of installing an offshore structure as claimed in claim 33, wherein the cut-out is elliptical

in shape.

~~35. A method of installing an offshore structure as claimed in claim 33 or 34, wherein a coupling plate is provided at the top and the bottom of the shear plate.~~

36. A method of installing an offshore structure as claimed in any of claims 33 to 35, wherein the shear plate and the coupling plate are welded together.

37. An offshore structure comprising a base, a deck, and a plurality of legs extending between the base and the deck, wherein the legs are arranged outboard of the deck and a connection is provided between an inwardly facing face of each said leg and the deck.

38. A method of installing an offshore structure comprising a base, a deck and a plurality of legs located outboard of the deck, the method comprising the steps of jacking the deck to the required height; forming a permanent connection between the deck and the legs; and removing the jacking system from the structure.